

SEQUENCE LISTING

<110> Chiron SpA
GRANDI, Guido
RAPPOLI, Rino
GULIANI, Marzia Monica
PIZZA, Mariagrazia

<120> ENHANCEMENT OF BACTERICIDAL ACTIVITY OF NEISSERIA ANTIGENS WITH OLIGONUCLEOTIDES CONTAINING CG MOTIFS

<130> 22300-21022.00

<140> US 09/914,454
<141> 2002-01-14

<150> PCT/IB00/00176
<151> 2000-02-09

<150> US 60/121,792
<151> 1999-02-26

<160> 34

<170> SeqWin99

<210> 1
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 1
tccatgacgt tcctgacgtt 20

<210> 2
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 2
ataatcgacg ttcaaggcaag 20

<210> 3
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 3

ggggtaaacg ttgagggggg	20
<210> 4	
<211> 18	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> oligonucleotide adjuvant	
<400> 4	
tctcccaagcg tgcgccat	18
<210> 5	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> oligonucleotide adjuvant	
<400> 5	
gagaacgctc gaccttcgat	20
<210> 6	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> oligonucleotide adjuvant	
<400> 6	
tccatgtcgt tcctgatgct	20
<210> 7	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> oligonucleotide adjuvant	
<400> 7	
tccatgacgt tcctgatgct	20
<210> 8	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> oligonucleotide adjuvant	
<400> 8	
gctagacgtt agcgt	15

<210> 9
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 9
atcgactctc gagcgttctc 20

<210> 10
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 10
gaaccttcca tgctgttccg 20

<210> 11
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 11
gcttagatgtt agcgt 15

<210> 12
<211> 8
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 12
tcaacgtt 8

<210> 13
<211> 8
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 13
gcaacgtt 8

<210> 14
<211> 8

<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 14
tcgacgtc

8

<210> 15
<211> 8
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 15
tcagcgct

8

<210> 16
<211> 8
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 16
tcaacgct

8

<210> 17
<211> 8
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 17
tcatcgat

8

<210> 18
<211> 8
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 18
tcttcgaa

8

<210> 19
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 19
tgactgtgaa cgttcgagat ga 22

<210> 20
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 20
tgactgtgaa cgttagcgat ga 22

<210> 21
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 21
tgactgtgaa cgttagagcg ga 22

<210> 22
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 22
gtttgcgcaa cgttgttgcc at 22

<210> 23
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 23
atggcaacaa cgttgcgcaa ac 22

<210> 24
<211> 22
<212> DNA
<213> Artificial Sequence

<220>

<223> oligonucleotide adjuvant

<400> 24
cattggaaaa cgttcttcgg gg 22

<210> 25
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 25
ccccgaagaa cgtttccaa tg 22

<210> 26
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 26
attgacgtca at 12

<210> 27
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide adjuvant

<400> 27
ctttccatcg acgtcaatgg gt 22

<210> 28
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer from example 2

<400> 28
cgcgatatccc atatgtgccaa aagcaagagc atc 33

<210> 29
<211> 25
<212> DNA
<213> Reverse primer from example 2

<400> 29
cccgctcgag cggcggtat tcggg 25

<210> 30
 <211> 1326
 <212> DNA
 <213> Neisseria meningitidis

<400> 30
 ataaaaaaat acctattccg cgccgcctg tacggcatc cgcgcgcac cctcgccgc 60
 tgccaaagca agagcatcca aacctttccg caaccgcaca catcgctat caacggccgc 120
 gacggcccg tcggcatccc cgaccggcc ggaacgacgg tcggcgccgg cggggccgtc 180
 tataccgtt taccgcacct gtccctgccc cactggccg cgaggattt cgccaaaagc 240
 ctgcaatctt tccgcctccg ctgcggcaat ttggaaaacc gcaaggctcg gcaggatgtg 300
 tgcgccaag ccttcaaaac cccgcgtcat tcctttcagg caaaacagt ttttgaaacgc 360
 tatttcacgc cgtggcagggt tgccggcaac ggaagcctt cggtagcgt taccggctat 420
 tacgaacccg tgctggaaagg cgacgcagg cgacggcac aagccgcgtt cccgatttac 480
 ggttattcccg acgattttat ctccgtcccc ctgcgtccg gtttgcggag cggaaaaagcc 540
 ctgtccgoa tcaggccagc ggaaaaaaac agccgcacaa tcgacaatac cggggccaca 600
 cataccgcgc accttcccg atccccatc accgcgcgcac caacagcaat caaaggcagg 660
 ttggaggaa gccgcgttcc cccctacac acgcgcaccc aaatcaacgg cggcgcgctt 720
 gacggccaaag ccccgatact cggtagcgc gaagacccctg tcgaattttt ttttatgcac 780
 atccaaaggct cggccgtt gaaaaaccccg tccggcaaat acatccgcac cggctatgcc 840
 gacaaaaaacg aacacttcyta cgttccatc ggcgcgtata tggcgatataa gggttaccc 900
 aaactcgac aaacctccatc gcaaggccat aagtcttata tggcgcaaaa tccgcacacg 960
 ctcgcgcgaaat ttttgggtca aaaccccgac tatatcttt tccgcgcgt tggcgaaagc 1020
 agcaactgacg gccctgtccg cgcactggcc acgcgcgtga tggggaaata tggcgccgc 1080
 gtcgcacccgc actacatttc ctgtggcgcc cccttatttgc tggccacccgc ccatcccggtt 1140
 acccgccaaag ccctcaacccg cctgtattatc ggcgcaggata cggcagcgc gattaaaggc 1200
 gcggtgcgcg tggatttattt ttggggatatac ggcgcaccaag cccgcgaact tggcgcaaa 1260
 cggaaaaacca cggatatgt ctggcgcgtc ctacccaaacg gtatgaaagcc cgaataccgc 1320
 ccgtaa

<210> 31
 <211> 441
 <212> PRT
 <213> Neisseria meningitidis

<400> 31
 Met Lys Lys Tyr Leu Phe Arg Ala Ala Leu Tyr Gly Ile Ala Ala Ala
 1 5 10 15

Ile Leu Ala Ala Cys Gln Ser Lys Ser Ile Gln Thr Phe Pro Gln Pro
 20 25 30

Asp Thr Ser Val Ile Asn Gly Pro Asp Arg Pro Val Gly Ile Pro Asp
 35 40 45

Pro Ala Gly Thr Thr Val Gly Gly Gly Ala Val Tyr Thr Val Val
 50 55 60

Pro His Leu Ser Leu Pro His Trp Ala Ala Gln Asp Phe Ala Lys Ser
 65 70 75 80

Leu Gln Ser Phe Arg Leu Gly Cys Ala Asn Leu Lys Asn Arg Gln Gly
 85 90 95

Trp Gln Asp Val Cys Ala Gln Ala Phe Gln Thr Pro Val His Ser Phe
 100 105 110

Gln Ala Lys Gln Phe Phe Glu Arg Tyr Phe Thr Pro Trp Gln Val Ala
 115 120 125
 Gly Asn Gly Ser Leu Ala Gly Thr Val Thr Gly Tyr Tyr Glu Pro Val
 130 135 140
 Leu Lys Gly Asp Asp Arg Arg Thr Ala Gln Ala Arg Phe Pro Ile Tyr
 145 150 155 160
 Gly Ile Pro Asp Asp Phe Ile Ser Val Pro Leu Pro Ala Gly Leu Arg
 165 170 175
 Ser Gly Lys Ala Leu Val Arg Ile Arg Gln Thr Gly Lys Asn Ser Gly
 180 185 190
 Thr Ile Asp Asn Thr Gly Gly Thr His Thr Ala Asp Leu Ser Arg Phe
 195 200 205
 Pro Ile Thr Ala Arg Thr Thr Ala Ile Lys Gly Arg Phe Glu Gly Ser
 210 215 220
 Arg Phe Leu Pro Tyr His Thr Arg Asn Gln Ile Asn Gly Gly Ala Leu
 225 230 235 240
 Asp Gly Lys Ala Pro Ile Leu Gly Tyr Ala Glu Asp Pro Val Glu Leu
 245 250 255
 Phe Phe Met His Ile Gln Gly Ser Gly Arg Leu Lys Thr Pro Ser Gly
 260 265 270
 Lys Tyr Ile Arg Ile Gly Tyr Ala Asp Lys Asn Glu His Pro Tyr Val
 275 280 285
 Ser Ile Gly Arg Tyr Met Ala Asp Lys Gly Tyr Leu Lys Leu Gly Gln
 290 295 300
 Thr Ser Met Gln Gly Ile Lys Ser Tyr Met Arg Gln Asn Pro Gln Arg
 305 310 315 320
 Leu Ala Glu Val Leu Gly Gln Asn Pro Ser Tyr Ile Phe Phe Arg Glu
 325 330 335
 Leu Ala Gly Ser Ser Asn Asp Gly Pro Val Gly Ala Leu Gly Thr Pro
 340 345 350
 Leu Met Gly Glu Tyr Ala Gly Ala Val Asp Arg His Tyr Ile Thr Leu
 355 360 365
 Gly Ala Pro Leu Phe Val Ala Thr Ala His Pro Val Thr Arg Lys Ala
 370 375 380
 Leu Asn Arg Leu Ile Met Ala Gln Asp Thr Gly Ser Ala Ile Asp Gly
 385 390 395 400
 Ala Val Arg Val Asp Tyr Phe Trp Gly Tyr Gly Asp Glu Ala Gly Glu
 405 410 415

Leu Ala Gly Lys Gln Lys Thr Thr Gly Tyr Val Trp Gln Leu Leu Pro
 420 425 430
 Asn Gly Met Lys Pro Glu Tyr Arg Pro
 435 440
 <210> 32
 <211> 797
 <212> PRT
 <213> Neisseria meningitidis
 <400> 32
 Met Lys Leu Lys Gln Ile Ala Ser Ala Leu Met Met Leu Gly Ile Ser
 1 5 10 15
 Pro Leu Ala Leu Ala Asp Phe Thr Ile Gln Asp Ile Arg Val Glu Gly
 20 25 30
 Leu Gln Arg Thr Glu Pro Ser Thr Val Phe Asn Tyr Leu Pro Val Lys
 35 40 45
 Val Gly Asp Thr Tyr Asn Asp Thr His Gly Ser Ala Ile Ile Lys Ser
 50 55 60
 Leu Tyr Ala Thr Gly Phe Phe Asp Asp Val Arg Val Glu Thr Ala Asp
 65 70 75 80
 Gly Gln Leu Leu Leu Thr Val Ile Glu Arg Pro Thr Ile Gly Ser Leu
 85 90 95
 Asn Ile Thr Gly Ala Lys Met Leu Gln Asn Asp Ala Ile Lys Lys Asn
 100 105 110
 Leu Glu Ser Phe Gly Leu Ala Gln Ser Gln Tyr Phe Asn Gln Ala Thr
 115 120 125
 Leu Asn Gln Ala Val Ala Gly Leu Lys Glu Glu Tyr Leu Gly Arg Gly
 130 135 140
 Lys Leu Asn Ile Gln Ile Thr Pro Lys Val Thr Lys Leu Ala Arg Asn
 145 150 155 160
 Arg Val Asp Ile Asp Ile Thr Ile Asp Glu Gly Lys Ser Ala Lys Ile
 165 170 175
 Thr Asp Ile Glu Phe Glu Gly Asn Gln Val Tyr Ser Asp Arg Lys Leu
 180 185 190
 Met Arg Gln Met Ser Leu Thr Glu Gly Gly Ile Trp Thr Trp Leu Thr
 195 200 205
 Arg Ser Asn Gln Phe Asn Glu Gln Lys Phe Ala Gln Asp Met Glu Lys
 210 215 220
 Val Thr Asp Phe Tyr Gln Asn Asn Gly Tyr Phe Asp Phe Arg Ile Leu
 225 230 235 240

Asp	Thr	Asp	Ile	Gln	Thr	Asn	Glu	Asp	Lys	Thr	Lys	Gln	Thr	Ile	Lys
			245				250					255			
Ile	Thr	Val	His	Glu	Gly	Gly	Arg	Phe	Arg	Trp	Gly	Lys	Val	Ser	Ile
		260					265				270				
Glu	Gly	Asp	Thr	Asn	Glu	Val	Pro	Lys	Ala	Glu	Leu	Glu	Lys	Leu	Leu
		275				280				285					
Thr	Met	Lys	Pro	Gly	Lys	Trp	Tyr	Glu	Arg	Gln	Gln	Met	Thr	Ala	Val
	290					295				300					
Leu	Gly	Glu	Ile	Gln	Asn	Arg	Met	Gly	Ser	Ala	Gly	Tyr	Ala	Tyr	Ser
	305				310				315			320			
Glu	Ile	Ser	Val	Gln	Pro	Leu	Pro	Asn	Ala	Glu	Thr	Lys	Thr	Val	Asp
		325					330				335				
Phe	Val	Leu	His	Ile	Glu	Pro	Gly	Arg	Lys	Ile	Tyr	Val	Asn	Glu	Ile
		340				345				350					
His	Ile	Thr	Gly	Asn	Asn	Lys	Thr	Arg	Asp	Glu	Val	Val	Arg	Arg	Glu
		355				360				365					
Leu	Arg	Gln	Met	Glu	Ser	Ala	Pro	Tyr	Asp	Thr	Ser	Lys	Leu	Gln	Arg
		370				375				380					
Ser	Lys	Glu	Arg	Val	Glu	Leu	Leu	Gly	Tyr	Phe	Asp	Asn	Val	Gln	Phe
	385				390				395			400			
Asp	Ala	Val	Pro	Leu	Ala	Gly	Thr	Pro	Asp	Lys	Val	Asp	Leu	Asn	Met
			405					410				415			
Ser	Leu	Thr	Glu	Arg	Ser	Thr	Gly	Ser	Leu	Asp	Leu	Ser	Ala	Gly	Trp
		420				425				430					
Val	Gln	Asp	Thr	Gly	Leu	Val	Met	Ser	Ala	Gly	Val	Ser	Gln	Asp	Asn
		435				440				445					
Leu	Phe	Gly	Thr	Gly	Lys	Ser	Ala	Ala	Leu	Arg	Ala	Ser	Arg	Ser	Lys
		450				455				460					
Thr	Thr	Leu	Asn	Gly	Ser	Leu	Ser	Phe	Thr	Asp	Pro	Tyr	Phe	Thr	Ala
	465					470			475			480			
Asp	Gly	Val	Ser	Leu	Gly	Tyr	Asp	Val	Tyr	Gly	Lys	Ala	Phe	Asp	Pro
		485				490				495					
Arg	Lys	Ala	Ser	Thr	Ser	Ile	Lys	Gln	Tyr	Lys	Thr	Thr	Thr	Ala	Gly
			500				505				510				
Ala	Gly	Ile	Arg	Met	Ser	Val	Pro	Val	Thr	Glu	Tyr	Asp	Arg	Val	Asn
			515				520				525				
Phe	Gly	Leu	Val	Ala	Glu	His	Leu	Thr	Val	Asn	Thr	Tyr	Asn	Lys	Ala
		530				535				540					

Pro Lys His Tyr Ala Asp Phe Ile Lys Lys Tyr Gly Lys Thr Asp Gly
 545 550 555 560
 Thr Asp Gly Ser Phe Lys Gly Trp Leu Tyr Lys Gly Thr Val Gly Trp
 565 570 575
 Gly Arg Asn Lys Thr Asp Ser Ala Leu Trp Pro Thr Arg Gly Tyr Leu
 580 585 590
 Thr Gly Val Asn Ala Glu Ile Ala Leu Pro Gly Ser Lys Leu Gln Tyr
 595 600 605
 Tyr Ser Ala Thr His Asn Gln Thr Trp Phe Phe Pro Leu Ser Lys Thr
 610 615 620
 Phe Thr Leu Met Leu Gly Gly Glu Val Gly Ile Ala Gly Gly Tyr Gly
 625 630 635 640
 Arg Thr Lys Glu Ile Pro Phe Phe Glu Asn Phe Tyr Gly Gly Leu
 645 650 655
 Gly Ser Val Arg Gly Tyr Glu Ser Gly Thr Leu Gly Pro Lys Val Tyr
 660 665 670
 Asp Glu Tyr Gly Glu Lys Ile Ser Tyr Gly Gly Asn Lys Lys Ala Asn
 675 680 685
 Val Ser Ala Glu Leu Leu Phe Pro Met Pro Gly Ala Lys Asp Ala Arg
 690 695 700
 Thr Val Arg Leu Ser Leu Phe Ala Asp Ala Gly Ser Val Trp Asp Gly
 705 710 715 720
 Lys Thr Tyr Asp Asp Asn Ser Ser Ala Thr Gly Gly Arg Val Gln
 725 730 735
 Asn Ile Tyr Gly Ala Gly Asn Thr His Lys Ser Thr Phe Thr Asn Glu
 740 745 750
 Leu Arg Tyr Ser Ala Gly Gly Ala Val Thr Trp Leu Ser Pro Leu Gly
 755 760 765
 Pro Met Lys Phe Ser Tyr Ala Tyr Pro Leu Lys Lys Lys Pro Glu Asp
 770 775 780
 Glu Ile Gln Arg Phe Gln Phe Gln Leu Gly Thr Thr Phe
 785 790 795
 <210> 33
 <211> 792
 <212> PRT
 <213> Neisseria gonorrhoeae
 <400> 33
 Met Lys Leu Lys Gln Ile Ala Ser Ala Leu Met Met Leu Gly Ile Ser
 1 5 10 15

Pro	Leu	Ala	Phe	Ala	Asp	Phe	Thr	Ile	Gln	Asp	Ile	Arg	Val	Glu	Gly
	20					25						30			
Leu	Gln	Arg	Thr	Glu	Pro	Ser	Thr	Val	Phe	Asn	Tyr	Leu	Pro	Val	Lys
	35					40					45				
Val	Gly	Asp	Thr	Tyr	Asn	Asp	Thr	His	Gly	Ser	Ala	Ile	Ile	Lys	Ser
	50					55				60					
Leu	Tyr	Ala	Thr	Gly	Phe	Phe	Asp	Asp	Val	Arg	Val	Glu	Thr	Ala	Asp
	65					70				75		80			
Gly	Gln	Leu	Leu	Leu	Thr	Val	Ile	Glu	Arg	Pro	Thr	Ile	Gly	Ser	Leu
	85					90				95					
Asn	Ile	Thr	Gly	Ala	Lys	Met	Leu	Gln	Asn	Asp	Ala	Ile	Lys	Lys	Asn
	100					105				110					
Leu	Glu	Ser	Phe	Gly	Leu	Ala	Gln	Ser	Gln	Tyr	Phe	Asn	Gln	Ala	Thr
	115					120				125					
Leu	Asn	Gln	Ala	Val	Ala	Gly	Leu	Lys	Glu	Glu	Tyr	Leu	Gly	Arg	Gly
	130					135				140					
Lys	Leu	Asn	Ile	Gln	Ile	Thr	Pro	Lys	Val	Thr	Lys	Leu	Ala	Arg	Asn
	145					150				155		160			
Arg	Val	Asp	Ile	Asp	Ile	Thr	Ile	Asp	Glu	Gly	Lys	Ser	Ala	Lys	Ile
	165					170				175					
Thr	Asp	Ile	Glu	Phe	Glu	Gly	Asn	Gln	Val	Tyr	Ser	Asp	Arg	Lys	Leu
	180					185				190					
Met	Arg	Gln	Met	Ser	Leu	Thr	Glu	Gly	Gly	Ile	Trp	Thr	Trp	Leu	Thr
	195					200				205					
Arg	Ser	Asp	Arg	Phe	Asp	Arg	Gln	Lys	Phe	Ala	Gln	Asp	Met	Glu	Lys
	210					215				220					
Val	Thr	Asp	Phe	Tyr	Gln	Asn	Asn	Gly	Tyr	Phe	Asp	Phe	Arg	Ile	Leu
	225					230				235			240		
Asp	Thr	Asp	Ile	Gln	Thr	Asn	Glu	Asp	Lys	Thr	Arg	Gln	Thr	Ile	Lys
	245					250				255					
Ile	Thr	Val	His	Glu	Gly	Gly	Arg	Phe	Arg	Trp	Gly	Lys	Val	Ser	Ile
	260					265				270					
Glu	Gly	Asp	Thr	Asn	Glu	Val	Pro	Lys	Ala	Glu	Leu	Glu	Lys	Leu	Leu
	275					280				285					
Thr	Met	Lys	Pro	Gly	Lys	Trp	Tyr	Glu	Arg	Gln	Gln	Met	Thr	Ala	Val
	290					295				300					
Leu	Gly	Glu	Ile	Gln	Asn	Arg	Met	Gly	Ser	Ala	Gly	Tyr	Ala	Tyr	Ser
	305					310				315			320		

Glu Ile Ser Val Gln Pro Leu Pro Asn Ala Gly Thr Lys Thr Val Asp		
325	330	335
Phe Val Leu His Ile Glu Pro Gly Arg Lys Ile Tyr Val Asn Glu Ile		
340	345	350
His Ile Thr Gly Asn Asn Lys Thr Arg Asp Glu Val Val Arg Arg Glu		
355	360	365
Leu Arg Gln Met Glu Ser Ala Pro Tyr Asp Thr Ser Lys Leu Gln Arg		
370	375	380
Ser Lys Glu Arg Val Glu Leu Leu Gly Tyr Phe Asp Asn Val Gln Phe		
385	390	395
Asp Ala Val Pro Leu Ala Gly Thr Pro Asp Lys Val Asp Leu Asn Met		
405	410	415
Ser Leu Thr Glu Arg Ser Thr Gly Ser Leu Asp Leu Ser Ala Gly Trp		
420	425	430
Val Gln Asp Thr Gly Leu Val Met Ser Ala Gly Val Ser Gln Asp Asn		
435	440	445
Leu Phe Gly Thr Gly Lys Ser Ala Ala Leu Arg Ala Ser Arg Ser Lys		
450	455	460
Thr Thr Leu Asn Gly Ser Leu Ser Phe Thr Asp Pro Tyr Phe Thr Ala		
465	470	475
Asp Gly Val Ser Leu Gly Tyr Asp Ile Tyr Gly Lys Ala Phe Asp Pro		
485	490	495
Arg Lys Ala Ser Thr Ser Val Lys Gln Tyr Lys Thr Thr Ala Gly		
500	505	510
Gly Gly Val Arg Met Gly Ile Pro Val Thr Glu Tyr Asp Arg Val Asn		
515	520	525
Phe Gly Leu Ala Ala Glu His Leu Thr Val Asn Thr Tyr Asn Lys Ala		
530	535	540
Pro Lys Arg Tyr Ala Asp Phe Ile Arg Lys Tyr Gly Lys Thr Asp Gly		
545	550	555
Ala Asp Gly Ser Phe Lys Gly Leu Leu Tyr Lys Gly Thr Val Gly Trp		
565	570	575
Gly Arg Asn Lys Thr Asp Ser Ala Ser Trp Pro Thr Arg Gly Tyr Leu		
580	585	590
Thr Gly Val Asn Ala Glu Ile Ala Leu Pro Gly Ser Lys Leu Gln Tyr		
595	600	605
Tyr Ser Ala Thr His Asn Gln Thr Trp Phe Phe Pro Leu Ser Lys Thr		
610	615	620

Phe Thr Leu Met Leu Gly Gly Glu Val Gly Ile Ala Gly Gly Tyr Gly
 625 630 635 640
 Arg Thr Lys Glu Ile Pro Phe Phe Glu Asn Phe Tyr Gly Gly Leu
 645 650 655
 Gly Ser Val Arg Gly Tyr Glu Ser Gly Thr Leu Gly Pro Lys Val Tyr
 660 665 670
 Asp Glu Tyr Gly Glu Lys Ile Ser Tyr Gly Gly Asn Lys Lys Ala Asn
 675 680 685
 Val Ser Ala Glu Leu Leu Phe Pro Met Pro Gly Ala Lys Asp Ala Arg
 690 695 700
 Thr Val Arg Leu Ser Leu Phe Ala Asp Ala Gly Ser Val Trp Asp Gly
 705 710 715 720
 Arg Thr Tyr Thr Ala Ala Glu Asn Gly Asn Asn Lys Ser Val Tyr Ser
 725 730 735
 Glu Asn Ala His Lys Ser Thr Phe Thr Asn Glu Leu Arg Tyr Ser Ala
 740 745 750
 Gly Gly Ala Val Thr Trp Leu Ser Pro Leu Gly Pro Met Lys Phe Ser
 755 760 765
 Tyr Ala Tyr Pro Leu Lys Lys Pro Glu Asp Glu Ile Gln Arg Phe
 770 775 780
 Gln Phe Gln Leu Gly Thr Thr Phe
 785 790
 <210> 34
 <211> 797
 <212> PRT
 <213> Neisseria meningitidis
 <400> 34
 Met Lys Leu Lys Gln Ile Ala Ser Ala Leu Met Val Leu Gly Ile Ser
 1 5 10 15
 Pro Leu Ala Leu Ala Asp Phe Thr Ile Gln Asp Ile Arg Val Glu Gly
 20 25 30
 Leu Gln Arg Thr Glu Pro Ser Thr Val Phe Asn Tyr Leu Pro Val Lys
 35 40 45
 Val Gly Asp Thr Tyr Asn Asp Thr His Gly Ser Ala Ile Ile Lys Ser
 50 55 60
 Leu Tyr Ala Thr Gly Phe Phe Asp Asp Val Arg Val Glu Thr Ala Asp
 65 70 75 80
 Gly Gln Leu Leu Leu Thr Val Ile Glu Arg Pro Thr Ile Gly Ser Leu
 85 90 95

Asn Ile Thr Gly Ala Lys Met Leu Gln Asn Asp Ala Ile Lys Lys Asn		
100	105	110
Leu Glu Ser Phe Gly Leu Ala Gln Ser Gln Tyr Phe Asn Gln Ala Thr		
115	120	125
Leu Asn Gln Ala Val Ala Gly Leu Lys Glu Glu Tyr Leu Gly Arg Gly		
130	135	140
Lys Leu Asn Ile Gln Ile Thr Pro Lys Val Thr Lys Leu Ala Arg Asn		
145	150	155
Arg Val Asp Ile Asp Ile Thr Ile Asp Glu Gly Lys Ser Ala Lys Ile		
165	170	175
Thr Asp Ile Glu Phe Glu Gly Asn Gln Val Tyr Ser Asp Arg Lys Leu		
180	185	190
Met Arg Gln Met Ser Leu Thr Glu Gly Gly Ile Trp Thr Trp Leu Thr		
195	200	205
Arg Ser Asn Gln Phe Asn Glu Gln Lys Phe Ala Gln Asp Met Glu Lys		
210	215	220
Val Thr Asp Phe Tyr Gln Asn Asn Gly Tyr Phe Asp Phe Arg Ile Leu		
225	230	235
240		
Asp Thr Asp Ile Gln Thr Asn Glu Asp Lys Thr Lys Gln Thr Ile Lys		
245	250	255
Ile Thr Val His Glu Gly Gly Arg Phe Arg Trp Gly Lys Val Ser Ile		
260	265	270
Glu Gly Asp Thr Asn Glu Val Pro Lys Ala Glu Leu Glu Lys Leu Leu		
275	280	285
Thr Met Lys Pro Gly Lys Trp Tyr Glu Arg Gln Gln Met Thr Ala Val		
290	295	300
Leu Gly Glu Ile Gln Asn Arg Met Gly Ser Ala Gly Tyr Ala Tyr Ser		
305	310	315
320		
Glu Ile Ser Val Gln Pro Leu Pro Asn Ala Glu Thr Lys Thr Val Asp		
325	330	335
Phe Val Leu His Ile Glu Pro Gly Arg Lys Ile Tyr Val Asn Glu Ile		
340	345	350
His Ile Thr Gly Asn Asn Lys Thr Arg Asp Glu Val Val Arg Arg Glu		
355	360	365
Leu Arg Gln Met Glu Ser Ala Pro Tyr Asp Thr Ser Lys Leu Gln Arg		
370	375	380
Ser Lys Glu Arg Val Glu Leu Leu Gly Tyr Phe Asp Asn Val Gln Phe		
385	390	395
400		

Asp Ala Val Pro Leu Ala Gly Thr Pro Asp Lys Val Asp Leu Asn Met		
405	410	415
Ser Leu Thr Glu Arg Ser Thr Gly Ser Leu Asp Leu Ser Ala Gly Trp		
420	425	430
Val Gln Asp Thr Gly Leu Val Met Ser Ala Gly Val Ser Gln Asp Asn		
435	440	445
Leu Phe Gly Thr Gly Lys Ser Ala Ala Leu Arg Ala Ser Arg Ser Lys		
450	455	460
Thr Thr Leu Asn Gly Ser Leu Ser Phe Thr Asp Pro Tyr Phe Thr Ala		
465	470	475
Asp Gly Val Ser Leu Gly Tyr Asp Val Tyr Gly Lys Ala Phe Asp Pro		
485	490	495
Arg Lys Ala Ser Thr Ser Ile Lys Gln Tyr Lys Thr Thr Ala Gly		
500	505	510
Ala Gly Ile Arg Met Ser Val Pro Val Thr Glu Tyr Asp Arg Val Asn		
515	520	525
Phe Gly Leu Val Ala Glu His Leu Thr Val Asn Thr Tyr Asn Lys Ala		
530	535	540
Pro Lys His Tyr Ala Asp Phe Ile Lys Lys Tyr Gly Lys Thr Asp Gly		
545	550	555
Thr Asp Gly Ser Phe Lys Gly Trp Leu Tyr Lys Gly Thr Val Gly Trp		
565	570	575
Gly Arg Asn Lys Thr Asp Ser Ala Leu Trp Pro Thr Arg Gly Tyr Leu		
580	585	590
Thr Gly Val Asn Ala Glu Ile Ala Leu Pro Gly Ser Lys Leu Gln Tyr		
595	600	605
Tyr Ser Ala Thr His Asn Gln Thr Trp Phe Phe Pro Leu Ser Lys Thr		
610	615	620
Phe Thr Leu Met Leu Gly Gly Glu Val Gly Ile Ala Gly Gly Tyr Gly		
625	630	635
Arg Thr Lys Glu Ile Pro Phe Phe Glu Asn Phe Tyr Gly Gly Leu		
645	650	655
Gly Ser Val Arg Gly Tyr Glu Ser Gly Thr Leu Gly Pro Lys Val Tyr		
660	665	670
Asp Glu Tyr Gly Glu Lys Ile Ser Tyr Gly Gly Asn Lys Lys Ala Asn		
675	680	685
Val Ser Ala Glu Leu Leu Phe Pro Met Pro Gly Ala Lys Asp Ala Arg		
690	695	700

Thr Val Arg Leu Ser Leu Phe Ala Asp Ala Gly Ser Val Trp Asp Gly
705 710 715 720

Lys Thr Tyr Asp Asp Asn Ser Ser Ala Thr Gly Gly Arg Val Gln
725 730 735

Asn Ile Tyr Gly Ala Gly Asn Thr His Lys Ser Thr Phe Thr Asn Glu
740 745 750

Leu Arg Tyr Ser Ala Gly Gly Ala Val Thr Trp Leu Ser Pro Leu Gly
755 760 765

Pro Met Lys Phe Ser Tyr Ala Tyr Pro Leu Lys Lys Lys Pro Glu Asp
770 775 780

Glu Ile Gln Arg Phe Gln Phe Gln Leu Gly Thr Thr Phe
785 790 795